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CLAIMS

1. A denitrification reactor with a culture fixed to an organized plastic-type support, combined with an installation for the nitrification and elimination of the carbon-based pollution, said reactor being supplied with a mixture of the raw effluent to be treated and of the effluent originating from the installation for the nitrification and elimination of the carbon-based pollution, characterized in that it comprises:

- two denitrification compartments (3, 4) provided with an organized plastic-type lining (8), these compartments, arranged in parallel, operating via successive, i.e. alternating, sections or loads, one being in the filling phase (denitrification and self-cleaning-out of the excess biomass) while the other is in the emptying phase (denitrification and drainage of the excess biomass);

- a drainage compartment (6) for receiving the denitrified effluent originating from one or other of said denitrification compartments;

- a system for supplying the mixture of effluents consisting of a rotary arm (11) which alternately supplies, at the surface, each of said compartments; and

- means (19, 21) for ensuring the recirculation of the denitrified effluent from the drainage compartment (6) to the installation (2) for the nitrification and elimination of the carbon-based pollution.

2. The reactor as claimed in claim 1, characterized in that the installation (2) for the nitrification and elimination of the carbon-based pollution is a bacterial bed or surface irrigation bed.

3. The reactor as claimed in claim 1, characterized

in that the installation (2) of the nitrification and elimination of the carbon-based pollution is a system of aerobic biological filtration in ascending air and water flow.

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4. The reactor as claimed in claim 1, characterized in that the installation (2) for the nitrification and elimination of the carbon-based pollution consists of biological disks to which the biomass is attached, 10 these disks revolving around a horizontal axis and being partly immersed in the effluent to be treated.

5. The reactor as claimed in any one of the preceding claims, characterized in that the lining (8) exhibits a 15 specific surface area of between 50 and 200 m²/m³, and preferably of 150 m²/m³.

6. The reactor as claimed in any one of the preceding claims; characterized in that the supply of the raw 20 effluent by means of said rotary arm (11) is carried out using a distribution means (12) receiving the mixture of effluents from a deflector (14) provided under re-uptake means in the floor (13) of the installation (2).

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7. The reactor as claimed in any one of the preceding claims, characterized in that the rate of recirculation, to the installation (2), of the effluent treated in said reactor is of the order of 300%.

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8. The reactor as claimed in any one of the preceding claims, characterized in that a buffer tank is envisioned in order to smooth out the flow rates and the loads.

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9. The reactor as claimed in any one of the preceding claims, characterized in that it is integrated into an effluent treatment installation comprising a step of biological treatment, in particular on a bacterial bed,

and a step of elimination of the suspended solids and
of treatment of the sludge by filtration-composting on
beds planted with reeds, the effluent denitrified in
said reactor (1) being recirculated in the bacterial
5 bed.